



FLWEMS Paramedic Medication Information For:

LIDOCAINE HYDROCHLORIDE

(LYE-doh-kayn)

Pregnancy Category: B IM: LidoPen Auto-Injector (Rx). Direct IV or IV Admixtures: Lidocaine HCl for Cardiac Arrhythmias Xylocaine HCl IV for Cardiac Arrhythmias Xylocard[®] (Rx). IV Infusion: Lidocaine HCl in 5% Dextrose (Rx)

Classification: Antiarrhythmic, class IB

See Also

See also *Antiarrhythmic Agents*.

Action/Kinetics

Shortens the refractory period and suppresses the automaticity of ectopic foci without affecting conduction of impulses through cardiac tissue. Increases the electrical stimulation threshold of the ventricle during diastole. It does not affect BP, CO, or myocardial contractility. IV: Onset, 45-90 sec; duration: 10-20 min. IM, Onset, 5-15 min; duration, 60-90 min. $t_{1/2}$: 1-2 hr. Therapeutic serum levels: 1.5-6 mcg/mL. Time to steady-state plasma levels: 3-4 hr (8-10 hr in clients with AMI). Protein-binding: 40-80%. Ninety percent is rapidly metabolized in the liver to active metabolites. Since lidocaine has little effect on conduction at normal antiarrhythmic doses, use in acute situations (instead of procainamide) in instances in which heart block might occur.

Uses: IV

Treatment of acute ventricular arrhythmias such as those following MIs or occurring during surgery. The drug is ineffective against atrial arrhythmias. IM: Certain emergency situations (e.g., ECG equipment not available; mobile coronary care unit, under advice of a physician).

Investigational: IV in children who develop ventricular couplets or frequent premature ventricular beats.

Contraindications

Hypersensitivity to amide-type local anesthetics, Stokes-Adams syndrome, Wolff-Parkinson-White syndrome, severe SA, AV, or intraventricular block (when no pacemaker is present). Use of the IM autoinjector for children.

Special Concerns

Use with caution during labor and delivery, during lactation, and in the presence of liver or severe kidney disease, CHF, marked hypoxia, digitalis toxicity with AV block, severe respiratory depression, or shock. In geriatric clients, the rate and dose for IV infusion should be decreased by one-half and slowly adjusted. Safety and efficacy have not been determined in children.

Side Effects

Body as a whole: Malignant hyperthermia characterized by tachycardia, tachypnea, labile BP, metabolic acidosis, temperature elevation. *CV:* Precipitation or aggravation of arrhythmias (following IV use) hypotension, bradycardia (with possible cardiac arrest), CV collapse. *CNS:* Dizziness, apprehension, euphoria, lightheadedness, nervousness, drowsiness, confusion, changes in mood, hallucinations, twitching, "doom anxiety," convulsions unconsciousness. *Respiratory:* Difficulties in breathing or swallowing, respiratory depression or arrest. *Allergic:* Rash, cutaneous lesions, urticaria, edema, anaphylaxis. *Other:* Tinnitus, blurred or double vision, vomiting, numbness, sensation of heat or cold, twitching, tremors, soreness at IM injection site, fever, venous thrombosis or phlebitis (extending from site of injection) extravasation. During anesthesia, CV depression may be the first sign of lidocaine toxicity. During other usage, convulsions are the first sign of lidocaine toxicity.

Laboratory Test Alterations

↑CPK following IM use.

Overdose Management

Symptoms: Dependent on plasma levels. If plasma levels range from 4 to 6 mcg/mL, mild CNS effects are observed. Levels of 6 to 8 mcg/mL may result in significant CNS and CV depression while levels greater than 8 mcg/mL cause hypotension, decreased CO, respiratory depression, obtundation, seizures, and coma.

Treatment: Discontinue the drug and begin emergency resuscitative procedures. Seizures can be treated

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with diazepam, thiopental, or thiamylal. Succinylcholine, IV, may be used if the client is anesthetized. IV fluids, vasopressors, and CPR are used to correct circulatory depression.

Drug Interactions

Aminoglycosides / ↑ Neuromuscular blockade *Beta-adrenergic blockers* / ↑ Lidocaine levels with possible toxicity *Cimetidine* / ↓ Clearance of lidocaine → possible toxicity *Phenytoin* / IV phenytoin → excessive cardiac depression *Procainamide* / Additive cardiodepressant effects *Succinylcholine* / ↑ Succinylcholine action by ↓ plasma protein binding *Tocainide* / ↑ Risk of side effects *Tubocurarine* / ↑ Neuromuscular blockade

How Supplied

Dextrose/Lidocaine Hydrochloride--Injection: 5%-0.2%, 5%-0.4%, 5%-0.8%, 7.5%-5%; *Lidocaine Hydrochloride--Injection*: 0.5%, 1%, 1.5%, 2%, 10%, 20%; *Kit*: 2%

Dosage

• **IV Bolus** *Antiarrhythmic*.

Adults: 50-100 mg at rate of 25-50 mg/min. Bolus is used to establish rapid therapeutic plasma levels. Repeat if necessary after 5-min interval. Onset of action is 10 sec. Maximum dose/hr: 200-300 mg.

• **Infusion** *Antiarrhythmic*.

20-50 mcg/kg at a rate of 1-4 mg/min. No more than 200-300 mg/hr should be given. Pediatric, loading dose: 1 mg/kg IV or intratracheally q 5-10 min until desired effect reached (maximum total dose: 5 mg/kg).

• **IV Continuous Infusion** *Maintain therapeutic plasma levels following loading doses*.

Adults: Give at a rate of 1-4 mg/min (20-50 mcg/kg/min). Reduce the dose in clients with heart failure, with liver disease, or who are taking drugs that interact with lidocaine. Pediatric: 20-50 mcg/kg/min (usual is 30 mcg/kg/min).

• **IM** *Antiarrhythmic*.

Adults: 4.5 mg/kg (approximately 300 mg for a 70-kg adult). Switch to IV lidocaine or oral antiarrhythmics as soon as possible although an additional IM dose may be given after 60-90 min.

END OF INFORMATION – NOTHING FOLLOWS